

In the claims:

- 5 1. An interface module for limiting sampling variation during *in-situ* spectral sampling at a tissue measurement site on an arm of a live subject, comprising:
a base having a top surface, a bottom surface and opposing ends, said base defining an aperture that communicates from said bottom surface to said top surface;
an elbow support, said elbow support replaceably attached to said top surface
10 at a first of said opposing ends;
a wrist support, said wrist support replaceably attached to said top surface toward a second of said opposing ends; and
a hand support, said hand support slideably attached to said base at said second of said opposing ends and protruding from said opposing end;
15 wherein said arm is received by said interface module so that said arm is supported in a comfortable position and reproducibly positioned in relation to a fiber optic probe;
wherein said supports limit contact of said arm with said interface module to distinct registration points; and
20 wherein said interface module is customizable to individual subjects.

11. An interface module for limiting sampling variation during *in-situ* spectral sampling at a tissue measurement site, comprising:
a base having two opposing surfaces and two opposing ends;
a plurality of support elements mounted on said base, wherein said support elements are adapted to receive a member bearing said tissue measurement site so that said tissue measurement site is reproducibly positioned and supported in relation to an optical coupling means, wherein said supports limit contact of said member with said interface module to distinct registration points; and
25 wherein said interface module is adjustable to individual subjects.
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30. A method of limiting sampling variation during *in-situ* spectral sampling at a tissue measurement site comprising the steps of:
limiting variation in placement of a tissue measurement site in relation to an optical coupling means;
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limiting variation in pressure applied by an optical coupling means to said tissue measurement site; and

limiting surface temperature transients at said tissue measurement site, wherein said temperature transients are caused by contact of said member with a subject interface module;

wherein signal-to-noise ratio is optimized to facilitate net analyte signal detection.

41. The method of Claim 38, wherein said elbow support is provided in a plurality of shapes and sizes, according to diameter of said elbow.

43. The method of Claim 42, wherein said means for adjusting elbow height comprises at least one shim, wherein said shim is placed beneath said elbow support, and wherein said shim is provided in a plurality of thicknesses.

Please insert new Claims 49 - 56 as follows:

49. An interface module for limiting sampling variation during *in-situ* spectral sampling at a tissue measurement site, comprising:

one or more support elements, wherein said one or more support elements are adapted to receive a member bearing said tissue measurement site so that said tissue measurement site is reproducibly positioned and supported in relation to an optical coupling means, wherein said one or more support elements limit contact of said member with said interface module to distinct registration points.

50. The interface module of Claim 49, further comprising a base, wherein said one or more support elements are mounted on said base.

51. A method of limiting sampling variation during *in-situ* spectral sampling at a tissue measurement site comprising the steps of:

limiting variation in placement of a tissue measurement site in relation to an optical coupling means; and

limiting variation in pressure applied by an optical coupling means to said tissue measurement site by limiting contact of a member bearing said tissue measurement site to distinct registration points.

5 52. The method of Claim 51, further comprising a step of:
limiting surface temperature transients at said tissue measurement site.

53. The method of Claim 51, wherein signal-to-noise ratio is optimized to facilitate net analyte signal detection.

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54. A method of limiting sampling variation during *in-situ* spectral sampling at a tissue measurement site comprising the steps of:

limiting variation in placement of a tissue measurement site in relation to an optical coupling means; and

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limiting surface temperature transients at said tissue measurement site, wherein said temperature transients are caused by contact of a member bearing said tissue measurement site with a subject interface module.

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55. The method of Claim 54, further comprising a step of:
limiting variation in pressure applied by an optical coupling means to said tissue measurement site.

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56. The method of Claim 54, wherein signal-to-noise ratio is optimized to facilitate net analyte signal detection.